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**Subject:** Study finds medications, viruses in public wells

<http://www.desmoinesregister.com/story/news/health/2015/08/21/small-levels-medications-viruses-found-iowa-public-wells/32102095/>

## Study finds medications, viruses in public wells

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Small levels of over-the-counter pain medications and antihistamines have been found in underground wells used for drinking water in Iowa, as well as human, animal and plant viruses, according to a new state study.

The pharmaceuticals and virus levels don't exceed current standards and health benchmarks, said the Iowa Department of Natural Resources, which looked at groundwater samples from 66 public water supply wells across the state. But environmental advocates say they raise concerns.

It's the first time the state has tested groundwater for viruses, pharmaceuticals and other emerging contaminants. It comes as the federal government is considering setting drinking water standards for some of the viruses and contaminants detected in the study.

The state also looked at ongoing Iowa water-quality problems, including nitrates, arsenic and pesticides, some of which exceeded federal drinking water standards.

The water tested in the study was raw groundwater, not treated drinking water that must meet the federal regulations. Often water is treated and blended from several wells or water sources before it goes to consumers.

"What we're reporting out isn't necessarily what the people in those towns are drinking," said Bob Libra, the state's geologist and a lead author of the study.

But Josh Mandelbaum, an attorney at the Environmental Law & Policy Center, said high nitrate levels in deep wells is concerning.

"Regardless of your source of water ... all Iowans should be concerned about nutrient pollution — rural Iowans, urban Iowans, Iowans who get their water from surface water, and Iowans who get their water from groundwater," Mandelbaum said.

In March, Des Moines Water Works filed a lawsuit against three rural counties, saying drainage tiles in Sac, Buena Vista and Calhoun counties have provided a conduit to move nitrogen from farm fields into the Raccoon River, one of two sources of drinking water for 500,000.

The utility says it has spent \$1.5 million over two years removing nitrates to meet federal safe drinking water standards.

The lawsuit has fueled debate between farm and environmental groups over how to tackle the state's water quality problems.

The state adopted a nutrient reduction strategy that outlines how wastewater treatment plants, businesses, farmers and others can cut the levels of nitrogen and phosphorus that enter Iowa's waterways and contribute to the dead zone in the Gulf of Mexico.

Here's what the study, sampling 66 underground wells across the state for 206 contaminants, found:

- Farm chemical compounds were detected in 41 percent of groundwater samples taken, although none were in concentrations that exceeded current benchmark levels.

"Most of these compounds were breakdown products of the herbicides metolachlor, alachlor and acetochlor. Mixtures of as many as six pesticide compounds were found together in individual water samples," the report said.

Along with some viruses and pharmaceuticals, the federal government is also considering setting standards for some of the chemical compounds found, the report said. Mandelbaum of the Environmental Law & Policy Center said Iowans need to know more about the chemicals in the state's water. "Contaminants are getting into the water, but we don't know what levels are safe yet," he said. "We need some safety standards." Libra, the state geologist, said the study showed that some "herbicide compounds — even some that haven't been used for a long time — are still out there. They last an awful long time." Glyphosate, a herbicide heavily used in farming, was not detected in the wells. A breakdown product of glyphosate was detected in 3 percent of wells at very small levels — 20 parts per trillion, the report said.

- At least one pharmaceutical was detected in 35 percent of the well samples, the study said. "Of the 108 pharmaceuticals that were analyzed, 14 were found. Concentrations of most of the pharmaceuticals detected were very low and close to the detection limit."

Of six pharmaceuticals that had reported concentrations above the detection limit, acetaminophen, an over-the-counter pain reliever, had the highest level of concentration. But even then, levels were small. "To put this in perspective, it would take approximately 200,000 glasses of untreated water to equal one recommended dose of acetaminophen for infants," the report said. Caffeine was the most frequently detected pharmaceutical compound, detected in 25 percent of samples, followed by a breakdown product of caffeine. Also detected in the sampling was lidocaine, an anesthetic commonly used in anti-itch creams, and diphenhydramine, an antihistamine.

- Microorganisms were detected in 21 percent of the wells, with the pepper mild mottle virus most commonly detected in 17 percent of samples.

Four other viruses and bacteria were detected at low concentrations, the study said: GII norovirus, human polyomavirus, bovine polyomavirus and Campylobacter. E. coli and five other viruses harmful to human health were not detected in any well, the state said. Libra, Iowa's geologist, said the study indicated that some public wells may be getting contaminated by leaking wastewater treatment lines or septic systems, given the detection of over-the-counter drugs and caffeine. Another indication is the presence of the pepper mild mottle virus, a plant virus found in human waste because people eat food that contains peppers, like hot sauce, the report said. It poses no risk for humans.

- Arsenic was detected in 36 percent of the samples, and 8 percent exceeded federal standards set for finished drinking water, the study showed. Arsenic is naturally occurring and can be removed from public and private drinking water.

Nitrates were detected in 26 percent of the wells that were sampled, with 3 percent of the samples exceeding federal standards for finished water.

"While this study was unique in its coverage of contaminants of emerging concern, it highlights the fact that well-known naturally derived and surface-derived contaminants like arsenic and nitrate continue to pose water-quality challenges for residents of this state," the report said.

Libra and others say the report indicates more testing is needed.

"Over time we need to know if it's getting worse or better," said Susan Heathcote, water program manager at Iowa Environmental Council. "Are the contaminants showing up in greater concentrations or less?"

"Those are important questions to answer in order to determine how to respond," Heathcote said. "We don't have good data about what's safe exposure."

Heathcote said more data should be collected, given that 2013 was a drought year, and the report could be under-representing the amount of contaminants present.

### **Assessing private wells**

The Iowa Farm Bureau offers a program, called Iowa Farm\*A\*Syst, to help rural Iowans assess the quality of their wells. For more information, go to [www.iowafarmbureau.com](http://www.iowafarmbureau.com)